An aerial black and white photograph showing a landscape with numerous contour lines, indicating a hilly or mountainous terrain. A winding road follows one of the contours. In the upper left, there is a cluster of buildings that look like a small town or farm complex. The terrain is divided into various agricultural fields by the contour lines.

May 1951

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

SOIL CONSERVATION.

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SECRETARY OF AGRICULTURE**

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WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

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FRONT COVER.—This 134-acre Bittersweet Dairy Farm, near Chestertown, Kent County Soil Conservation District, Md., belongs to Stanley B. Sutton & Son. A complete conservation farm plan has been in effect more than 11 years. The farm includes 84 acres cropland, 30 acres permanent pasture, 12 acres woodland, 8 acres in homestead and roads. Strips are in corn, barley, and hay—some of them $1\frac{1}{4}$ mile long. The original barn (now remodeled and enlarged) is more than 100 years old; the house, more than 120 years old. Photographer: Gordon S. Smith.



Eight national winners, with Raymond C. Firestone. Front, left to right: J. Robert Gochnauer, 17, Calhan, Colo.; Grady Torrance, 16, Milledgeville, Ga.; Jere Wise, 16, Newton, Iowa; John M. Burrier, 20, Union Bridge, Md.; Raymond C. Firestone. Rear: Gene Robberson, 21 McAlister, N. Mex.; Bruce E. Ketch, 20, Bath, N. Y.; Roland W. Schwanke, 19, Watertown, S. Dak.; Robert Buck, 18, Tennessee winner (address, Guthrie, Ky.).

4-H CLUBS HELP SAVE NATION'S SOIL

By G. L. NOBLE

An acre of good soil is worth more to sustain life than all the skyscrapers in New York City! So reasoned 4-H'er Jere Wise of Jasper County, Iowa. Jere won national recognition for outstanding work in the 4-H soil and water conservation program.

Sixteen-year-old Wise is but one of several hundred thousand 4-H Club members who realize the importance of productive soil, and toward that end are practicing conservation. These rural boys and girls receive guidance and training from the Extension Service, the Soil Conservation Service, and local club leaders.

Note.—The author is director, National Committee on Boys and Girls Club Work, Inc., Chicago, Ill.

Because of the project's wide scope, time, and manpower involved, the 4-H program was revised last year to meet the needs of two different age groups: those 10 to 14 years, and those 15 to 21. The plan worked out very well, and awards were presented to both groups by the Firestone Tire and Rubber Co., sponsors of the program, in cooperation with the Extension Service, and the Soil Conservation Service.

It is difficult to put a price tag on the project. However, 4-H'ers who have studied and practiced conservation methods are convinced that the value to both the individual farmer and to the Nation as a whole is immense. Those boys and girls know, too, that the success of their endeavors depends upon getting parents to understand what is needed to preserve the soil. If it weren't for a 4-H son or daughter, many fathers would continue farming

practices which would eventually lower their income and work hardships on the entire family.

The 4-H boys selected last year for doing the most outstanding job in soil and water conservation have learned many useful agricultural practices. Above all, they have learned what a priceless possession the topsoil is, and are striving to hold it.

Bruce Ketch, who lives on a dairy farm in Steuben County, N. Y., reports that by using recommended practices over an 8-year period, he and his dad were able to improve crops and pastures for dairy cattle until butterfat production increased nearly 100 pounds per cow. One of Bruce's undertakings was to restore a 4-acre pasture which hadn't been plowed in 25 years. Layers of stones had become imbedded under the sod. After plowing, and then harrowing the ground seven times, Bruce netted 10 large loads of stones and a pasture ready for production.

Soil conservation also paid off on the Moore farm in Delaware County, Okla. Charles Moore, a 4-H'er since he was 8, soon realized that the land was gradually being washed away, and conservation became his leading project. He explained to his father what was happening. It wasn't long before they were working together on a program set up by the county agent and the nearby Soil Conservation Service office. They built ponds and outlets, added minerals to the soil, planted pastures, and adopted strip cropping and contour farming. The place now consists of 130 acres of cultivated land; 105 acres of permanent pasture, 4 acres in meadow, and 5 acres partly landscaped around the farmstead. Best of all, crop production per acre has doubled.

Back in 1880 a covered wagon—gray with dust and mud—came to a final halt on a barren stretch in El Paso County, Colo. There were no shrubs, trees, water, or shelter. To this new frontier had journeyed the Gochnauer family from their home in Illinois. Here, today, lives the grandson of that foresighted pioneer. He is Bob Gochnauer, a 4-H'er, who won a \$300 scholarship for achievement in the soil and water conservation program.

Bob and his father continued and improved on the practices begun by Grandfather Gochnauer, who was one of the few farmers in those early days to realize that crop rotation, windbreaks, and stubble were necessary to hold the land and keep it productive. Through Bob's 4-H training, and assistance from the Black Squirrel Soil District, 1,000 acres of the 1,600-acre farm were contoured grasslands. Ponds were added, strip cropping used, and some 2,000 trees planted. From all indications, the Gochnauer farm will remain in expert hands for still another generation, because Bob plans to continue his studies in agriculture at college.

Within 10 years the Torrance farm in Baldwin County, Ga., has been restored largely through son Grady's 4-H Club participation in the soil conservation project. He won national honors for good work.

The Torrance farm had been planted to cotton year after year, sapping most of the fertility from the soil. Sheet and gully erosion had seriously damaged the land. Now, following a carefully planned program, erosion has been controlled, crop yields have increased, and pastures have been restored.

Many similar stories of 4-H accomplishment in conservation could be told. They are reports of "learning by doing," which is the 4-H way. The number of boys and girls taking part in the national program is steadily increasing, as well as the number of counties producing winners.

More than 1,600 4-H delegates to the last National Club Congress saw the impressive color-print exhibit of rural America developed by the Soil Conservation Service. Titled "The Land We Live By," the presentation showed important aspects of conservation farming, as well as universal problems affecting the productive use of land and water resources. Varying from the tragedy of wind and water erosion to the strength and assurance of fertile, well-tended lands, the display made a great and lasting impression on the young people, on their club leaders, and on the many parents who were there.

An unusual part of the exhibit was the furniture made from woods ordinarily grubbed out and thrown away. Useful and beautiful, the articles emphasized realistically the economic value of com-

(Continued on page 226)



4-H Clubbers of Mt. Vernon, Ohio, learn that a farm pond is fine not only for livestock but also for fighting fires, swimming, and fishing.

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GROUP ACTION IS A MIGHTY FORCE IN THE NORTHWEST

By HERB BODDY

SINGLE-HANDED or in groups, farmers of the Pacific Northwest are seeking the answers to their soil and water conservation problems. Scores of Washington, Oregon, and Idaho communities have irrigation, erosion, drainage, and high-water troubles that have gone unsolved for years. Those farmers who have tackled their worries through self-help, group-action movements say that by pitching in together they found they could work out all kinds of tough, complex land jobs.

Here are some of the talking-points they offer for group action:

1. Big and little community, and neighborhood-wide, land jobs generally can be worked out at less cost to individual farmers.
2. Needed conservation work can be done faster and, in most cases, more efficiently.
3. The over-all group-action job can be speeded up by doing technical and engineering work on a community-wide scale.
4. Whole communities benefit from farmer-action projects.

For a first-hand look at group action, let's see how things are shaping up in the Swan's Trail community in northwest Washington. Two years ago 26 farmers pitched in to drain their lands. Last spring more than 500 acres of wet, low-production land in the area was in top working order for the first time.

Tennis A. Roetcisender, a Swan's Trail farmer and a leader in the community's swing to conservation farming, looks at group action this way:

"We had a big land-drainage job to do. But, the cost was too high for any one farmer to bear. Yet at \$500 an acre our lands were too valuable to sit idle. When it dawned on us that it was a case of sinking or swimming together, we joined forces. The step to group action helped 26 of us drain from 1 to 72 acres of the wettest kind of land."

NOTE.—The author is information and editorial specialist, Soil Conservation Service, Portland, Oreg.



Twenty-six farmers cooperated in draining 558 acres in Swan's Trail community. Here is main control structure: 6-foot culvert with standpipe and 3,000 gpm pump. James Spada, SCS technician, checks water level on land side of dam.

The Snohomish County Soil Conservation District, from which hail such baseball greats as Earl Torgenson, Boston Braves infielder, and ex-major leaguer, Earl Averill, is one of the country's strongholds for the group-action kind of teamwork. So far some 35 successful group-facility movements have been carried out in the county.

Like other Snohomish County communities, Swan's Trail farmers were up against the problem of draining wet, fertile, Classes I and II lands. Other conservation work was needed, too, including seeding of good pasture mixtures and soil-fertility building. But the task of ridding fields of water came first.

There is frank pride in the talk of Swan's Trail landowners now. Many of them are enjoying full use of their old water-laden fields for the first time.

But, they wince when they recall how things stacked up a few years ago.

Here's how Roeteiscender describes the farming picture in the 1940's:

"Half of the Swan's Trail area badly needed drainage. Yields of peas, corn, broccoli, spuds, and pasture and hay crops were way down. Farm incomes were dropping steadily. Some 500 acres had been allowed to go back to sedges. Farmers could farm productively only near their homes, on higher ground along the banks of the Snohomish River.

"Our Swan's Trail community is one of the oldest farming areas in the county. Years ago we had a taste of group action. We worked together to put in a main drainage ditch through our lands. But before long the ditch clogged up and that was the end of our drainage system. It was just too much work for one farmer to keep it open.

"The water table of most of our farm drainage ditches was too high to drain the lands properly. Our Puget clay and Snohomish silt loam soils were losing fertility fast. Much of our lands were already leached and sour. Lands were so water-logged we couldn't till or seed half of our acreages. The best we could do was a little summer grazing off native pastures."

Roeteiscender likes to skip over those lean years. But, he warms up readily when you ask him to tell about the farmers' second and most successful group-action undertaking.

Says he, "Twenty-three of us met in 1948 to see what could be done about things. We agreed to set up the same kind of group-action program as other Snohomish County communities were using.

"Our new Swan's Trail drainage district joined in a working agreement with the soil conservation district. Soon technicians of the Soil Conservation Service were out on our lands getting a line on our conservation needs. They made soil surveys, worked up engineering data for the drainage job, and outlined the capabilities of our lands.

"We were a bit taken aback when the technicians explained what had to be done. The 3,500-gallons-per-minute pumping plant, tide gates, and extensive ditching system sounded like big money to us. But, actually, the cost per farmer was relatively small when we divided the \$9,190 job among 26 of us."

By April 1949 a private contractor had cleaned out and dropped the water table of the main drainage channel. The new pumping unit and tide gates

were in place and a good start had been made in laying farm "feeder" ditches connecting with the main drainageway.

When the wet lands began to drain, Swan's Trail farmers lost no time putting in selected pasture-seed mixtures. The seed mixtures were worked out jointly by members of the Snohomish County staffs of the Production and Marketing Administration, the county agent, the Soil Conservation Service, and the soil conservation district.

The agencies recommended the following pasture mixture as being adapted for use in the newly drained Swan's Trail area:

	Pounds per acre
English rye	3
Akaroa orchardgrass	4
Alta fescue	6
Alsike clover*	3
White Dutch clover	3
Red clover	4
Total	23

*Alsike clover is deleted when red clover is used in the mixture.
Red clover is added when the pasture is to be used primarily for hay.

Farmers plowed and seeded 40 acres as a starter a year ago. This spring they plan to seed about 100 more acres to the same pasture mixture.

Along with their new pasture seedings, the Swan's Trail community has a program for building soil fertility. They believe they can restore the richness and productiveness of their lands by carefully following a planned fertilizing program.

Hay and pasture crops are getting 300 pounds or more of commercial fertilizer per acre. From 600 to 700 pounds per acre are applied on cash crops such as corn and broccoli. The ratio is 5-10-10—nitrogen, phosphate, and potash—depending on the type of crop.

Cash crops produced on drained Swan's Trail lands last summer grossed better than \$100 per acre.

Some of the leading participants in the Swan's Trail group-action movement are Lloyd Anderson, Ernest Bachart, Roy Mercer, Perry Porter, Samuel Thompson, Clarence Yesland, Stanley Krause, Leonard Tengel, J. E. Haselton, and E. O. Staswick.

Today, Swan's Trail farmers can add their good drainage work to a long line of soil conservation developments carried out the last few years in Snohomish County.



This piece of land until recently was wet and sedge-covered. Thanks to drainage through a "neighborhood action" program sponsored by the Snohomish County Soil Conservation District, it is now in full cultivation. Here the furrows were being turned on the farm of Tennis Roeteiscender. W. C. Pettibone, SCS technician, chats with plow operator. Just the week before, a similarly drained area on the other side of the fence had been put into cultivation.

Wilbur C. Pettibone, in charge of the Snohomish SCS office, cites some of the group-action projects:

1. French Slough Flood Control District on east bank of Snohomish River, 122 farmers, 580 acres drained.
2. John Misich dike. Road raised between Snohomish and Lowell to serve as dike. Some 5,800 acres benefited, including 200 farms. Work keeps Snohomish River within bounds and prevents flooding of spring crops.
3. Stillaguamish River area, 50 farms, 877 acres protected from spring high water.
4. Marysville Diking District No. 3, 400 acres, 15 farms benefited.
5. Snoqualamie Slough diking work keeps water off 1,500 acres, 5 farms. Work included installation of pumping plant, tide gates, and building of earth-filled dams.
6. Two projects completed in Snohomish River area protects 4,000 acres and 160 farms.

Meanwhile, Ted Beckmeyer, chairman, and the rest of the five-man governing body of the Snohomish district, say their 35 group-action projects are just a "forerunner" of many more to come.

COOPERATIVE PUSH.—Horace and Walter Lyman invited four neighbors to their home last spring to meet Soil Conservation Service techni-

cians who work with the Hampden (Mass.) Soil Conservation District. Things started to move in the Chester Hill area. Through use of land-capability maps prepared by SCS, the group became interested in having complete conservation plans. They pooled their resources to get the improvements on the land. Most of them needed better hay and pastures. This called for reshaping fields by removal of stone walls, boulders, and trees to permit more efficient use of equipment. A contractor was hired for the job. The SCS technicians made the plans and staked out the work, including land clearing, grass waterways, contouring, strips, improved forestry practices, and better management of hay and pasture lots. Completion of the work will require several years. The Lymans, Welcome Meacham, Roger Scott, Leon Kelso, and J. M. Sherwood are the cooperating farmers.

DEED FOLLOWS CONTOUR.—When an 80-acre tract was being sold recently from an estate in the Shiloh O'Fallon Soil Conservation District in Illinois, it was found that the usual rectangular shape would cause the new property line to cut across two terraces, making them practically useless. But both buyer and seller were cooperators with the district. They knew the value of conservation farm plans. So with some help from the SCS a land deal was made that was really "on the level." The buyer got several acres less land. The two terraces will stay on the job as they were originally planned.

SHRUB LESPEDEZA REQUIRES INSECT POLLINATION

By KARL E. GRAETZ

THE bees are among the bobwhite's best friends. That is because bicolor lespedeza must be pollinated by insects to set a useful crop of seed—a fact of importance to all who are interested in producing bumper seed crops of *Lespedeza bicolor* and the other perennial bush lespedezas.

For the past several years the Soil Conservation Service in the southeast has been carrying on a diligent search for an early-maturing bush lespedeza. *Lespedeza bicolor*, which is the "super food market" for quail in the south, reaches its northern range limit in Virginia and Kentucky. In areas which can expect a killing frost before October 15, bicolor does not furnish a dependable annual supply of food for quail. Thus, the birds living north of the dependable bicolor range seemed to have a legitimate complaint.

As far back as 1939, Verne E. Davison, regional biologist, took note of this unhappy state of affairs. He and L. B. Scott, chief of the regional nursery division, set up a project with the definite purpose of finding an early-maturing bush lespedeza which would extend the range of this plant farther north.

The first step was to bring together the most promising species and varieties. These included *Lespedeza japonica*, *formosa*, *intermedia*, *robusta*, and *bicolor* (natob). Observational plots of each were established at the SCS nurseries in Gretna, Va., Thorsby, Ala., and Paducah, Ky. An additional series was set up at the Virginia Polytechnic Institute, Blacksburg, Va., with the State Game Division cooperating. Here the plots are under the supervision of Dr. Henry S. Mosby, leader of the wildlife research unit, and Prof. A. B. Massey of the botany department.

At these locations the varieties growing side by side could be closely compared and evaluated. It was noted immediately that there was a considerable variation in the character of the individual plants even in the same species. This lack of uniformity seemed odd, as bush lespedeza was thought to be a self-pollinated plant in which mixing of



At left, pollinated branches of *lespedeza bicolor*; at right, unpollinated branches.

different characteristics from other species or varieties would be very improbable. We have, in fact, an observation made by A. J. Pieters in 1934. In his publication "The Little Book of Lespedeza" he stated: "While there is no experimental evidence, it seems probable that all lespedezas are largely self-fertile, and that there is little, if any, crossing between species and varieties."

As time went on, many parent plants were selected for earliness in maturing seed. Along with earliness we also chose carefully for vigor, good seed yield, and for the persistency with which the seed clings to the branches. The seeds from each selection were planted in beds at the Gretna nursery. After one growing season we dug and replanted them in observational rows at all four stations. From there it became evident that some of the seedlings strayed from resemblance to their parent plant. We suddenly came up with a japonica that had the height and earliness of bicolor. We found bicolor which had the leaves and seed color of intermedia—and so on. Definitely, something was going on that we did not know about!

NOTE.—The author is observational agronomist, Soil Conservation Service nursery, Gretna, Va.

Accordingly, we studied the pollination of these shrubs in the summer of 1950. Three screen-wire cages were built. They stood on legs about 5 feet high. We picked out one well-developed shrub from each of three lespedeza species: *L. bicolor*, *L. japonica*, and *L. intermedia*. The cages were placed over these plants so that half of the bush was completely enclosed in the insect-proof screen cage. The other half was left in the open but underneath a screen awning. The awning gave the branches outside the same amount of light as those inside. None of the shrubs was in bloom when caged.

As the summer passed we noticed the bees (and other insects too) busily working the blooms outside the screening. Those flowers soon produced pods; while those inside the cage fell off, leaving practically all the stems bare. At the end of the season the unscreened branches of all three species produced a normal yield of seed. The actual number of these seeds was estimated to be between 3,000 and 4,000. The branches protected from the

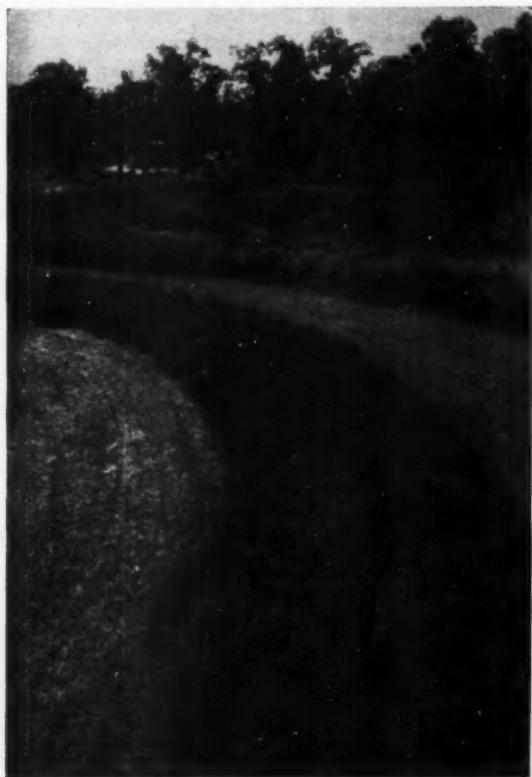
insects produced exactly 14 seeds on the 3 plants. Those 14 seeds, negligible as they are for all practical purposes, still defeated a clear-cut, black-and-white result. It is probable that an ant or some other small insect got through the screens and blundered around inside until it had pollinated those few flowers. As a result we hesitate to make a specific claim (at least within earshot of those 14 seeds!) that bush lespedeza *must* be cross-pollinated. We can say that without the insects it is impossible to produce a good seed crop.

At any rate we have picked the feathers off the old idea that bush lespedeza does not depend on insects to make seed. The formerly accepted theory was born of the habit of lumping these lespedezas with the annual lespedezas which are self-fertile. *Lespedeza sericea*, playing it safe, has some flowers which depend on insects and others which do the job themselves.

The results of this study will cause us to alter our technique in seeking better selections. We have several which are better than our original stock, but as yet no one has found a plant which is tops in all four desirable traits: (1) earliness, (2) high seed yield, (3) vigor, and (4) persistency. However, it is easy to find two selections which together possess all the necessary features. Why not then plant these two next to each other to make the interchange of their pollen more probable? It seems logical to suppose that somewhere among the resulting progeny we shall find a blending of the desired characteristics. In the future we shall pay more attention to the actual location of each type selection in the observational rows.

Almost all of our agricultural practices today contribute to the destruction of wild bees and their habitat. Wild bees once performed most of the pollination task. Authorities agree that 80 percent of this work has now fallen upon the willing wings of the honeybee. Without a sufficient bee population those crops which depend on insect pollination will not produce maximum seed crops. The sportsmen, farmers, or seed producers who have bush lespedeza plantings of an acre or more should consider this factor. In cases where there are few bees it may be necessary to set up honeybee colonies adjacent to the fields. One colony to the acre should be the minimum.

We have had six colonies of honeybees at the Gretna nursery. Last spring these bees were moved away. During the summer I took particular note



Lespedeza bicolor planting involved in study of hedge suitable as source of food and shelter for wildlife.

of the insects working on the lespedeza blooms. Only an occasional honeybee could be found. At least 95 percent of all the pollination was done by wild bumblebees. Fortunately there seemed to be a great number of them. We have extensive wild and wooded areas surrounding the nursery, which furnish excellent habitat for these insects. Had we been in an area of more intensive agriculture with a low wild-bee population our seed crop probably would have declined.

Pollination should not present a problem to the average farmer who has a small bush lespedeza "food patch." Such small plantings can be readily pollinated by a limited number of bees. Then too, these strips are generally planted next to wild cover which furnishes a home for the bees as well as the quail.

So it turns out that the bee is one of the bobwhite's best friends.

In the fall I, myself, enjoy tramping our bicolor strips to make threatening motions at Bobbie with a shotgun. As the wads drift gently to earth and every single member of the covey disappears in the distance, I am warmed by one thought—they might not have been there at all had it not been for our friend, the bee.

4-H CLUBS SAVE SOIL

(Continued from page 220)

mon farm trees and the savings effected by cutting instead of burning. The collection was loaned by Dr. Hugh H. Bennett.

Raymond C. Firestone, vice president of Firestone Tire & Rubber, summed up pretty well what 4-H'ers have already pledged to do. In his address he said, "The conservation of our land and the preservation of our liberty are two of the most important responsibilities that the coming generation must assume if our country is to remain self-sustaining and free."

The 4-H boys and girls—2,000,000 if you count them all—are indeed "serving their country by saving the soil."

ASSESSMENT SCALE.—Taxes on agricultural land in the Washington County (Minn.) Soil Conservation District may soon be based on land capabilities. Morrie A. Bolline, district conservationist, and Francis L. Paulson, farm planner for the district, have trained the county assessor in the interpretation of land-class information. A comparative valuation ratio has been tentatively worked out for each land class. Starting at 1.00 for Class I, the ratios range down to 0.045 for Class VII.

EIGHT FARMERS DRAIN LAND

By W. H. COLEMAN

THIS is a story of cooperation in the boot heel of southeastern Missouri, where drainage is a major problem in eight counties.

Drainage had supplied many a headache since the first settling of the land now farmed by John Deneke, William Deneke, John Thoma, Fred Thoma, Harvey Hoffman, Hubert Young, Walter Eggiman, and Norman Hager. These men farm the upper end of the delta between Dutchtown and White-water. Of the 10 farmers owning 1,210 acres in the watershed 8 decided to make a cooperative effort toward reclaiming their wet lands and improving drainage on the balance. None of these men by himself could obtain adequate drainage, because the natural watershed within which these farms are located had a common outlet, East Bean Branch, and the water crossed all the farms.

With help from the Soil Conservation Service and other agencies, working through their soil conservation district, these men now substantially have increased the total value of their farms by guaranteeing higher production and insuring full harvests. Two of the ten farmers did not participate but received benefits from the project nevertheless; the other eight were willing to furnish them free drainage in order to improve their own farms.

Their first step was to form an organization and ask assistance from their soil conservation district. The District Board of Supervisors, Ervin Hobbs, F. E. Jones, Elmer Schaper, Luther Cooper, and A. D. Arnhart, nodded approvingly and requested the Soil Conservation Service staff at Jackson to see whether the project was feasible.

After deciding on the practicality of the project, the technicians made a detailed survey. Drainage ditches were located and staked out and the yardage to be moved calculated. The main ditching job involved 5.1 miles and required the movement of 42,423 cubic yards of dirt.

The magnitude of the job was such that it at-

Note.—The author is district conservationist, Soil Conservation Service, Cape Girardeau, Mo.

tracted a lot of dirt-moving contractors. Individuals usually pay from 17 to 20 cents per yard for moving dirt due to the fact that it costs money to move draglines long distances for small jobs. Out of six bids received, a contract was awarded at 13.4 cents per yard!

While the main ditching job was completed January 1, 1951, a great deal of field ditching still remains to be done. In fact, on the eight farms these men will construct a total of 16.3 miles of field ditches varying in depth from 1 to 2½ feet, with 3 to 1 side slopes. The dragline ditches were much larger, varying from ditches 6 feet deep with bottoms 6 feet wide, and 2 to 1 side slopes at the outlet end, to ditches 4 feet deep with 4-foot bottoms toward the upper end of the drainage area. Field ditches will be constructed mainly with ordinary farm tractors over a period of years as the farmers can fit this job into their regular farm work. Blades, disk plows, and possibly whirlwind terracers will be used on this construction work, all of which have proved practical.

Let's consider for a moment the benefits derived from this job. The entire watershed, or drainage area, includes 1,090 acres, a small part of the watershed being hill land. Of this area, 1,014 acres have been directly benefited. Some 455 acres were not even fit for wildlife use because of intermittent flooding; most was wasteland. As a result of drainage a part of this 455 acres will be some of the highest-producing land in the whole project; crops on the balance of the 1,090 acres will be safe from flooding. After being drained, these 455 acres could now be valued at \$50 per acre, or \$22,750. Formerly the better land on these farms had to carry the tax burden on it. The value of the other 635 acres benefited has been increased approximately \$25 per acre, a total of over \$15,000. The over-all drainage costs for this job were \$11.48 per acre.

In letting the contract, these men did not stop with ditching alone but included the leveling of spoil banks. The contractor bid 4 cents per yard for this work. Thus, they can now farm right up to the ditch banks without having spoil banks taking up valuable land.

Payment was made by individuals on the basis of acreage directly benefited by the project.

All eight of these cooperating farmers now have applied for assistance from the district in working out complete conservation farm plans. Drainage

is just as important a soil conservation practice to these men as terracing is to hill farmers. In brief, before a good soil-conserving and soil-building rotation can be followed drainage must be taken care of here. These men want to go all the way and bring their farms into a high state of productivity and still maintain this high level to pass on to their children. Their conservation farm plans include soil treatments and proper rotations with better hay and pasture crops. These people are livestock men and all of this adds up to greater feed production, better livestock, and finally, better living—the aim of any soil conservation program.

The Production and Marketing Administration certainly helped on this job through incentive payments which took care of a substantial part of the dirt moving costs.

This project typifies how southeast-Missouri farmers who have been farsighted enough to organize soil conservation districts are solving problems common to most of them, using their districts as the medium through which they may obtain needed assistance.



FLOOD CONTROL EFFECTIVE.—When a face lifting was held at the Willard Speer hilltop farm at Apalachin, near Owego, N. Y., in August 1949, a large pond was constructed sufficient to impound more than 5½ million gallons of runoff water, as a flood-control measure. Under normal conditions about 1½ million gallons would be held there. Following heavy rains last winter, the water was close to the top of a spillway installed to prevent flooding of a highway through the valley. Since then, after the valley stream has been reduced to normal flow, the impounded water has been slowly released through a 6-inch trickle tube. At the same time two smaller ponds, also built during the face lifting, have been holding back additional runoff from rain and melting snow. The ponds seem to be meeting every expectation of the technicians who designed them and supervised construction for the Tioga County Soil Conservation District.

ON KALAUPAPA, THE LAND, TOO, FINDS A CURE

By NORMAN K. CARLSON

IN THE summer of 1949, the Molokai Soil Conservation District in the Territory of Hawaii received an unusual request for technical assistance. It came from Lawrence M. Judd, director of the Division of Hospitals and Settlements of the Territory. The request asked for a land-capability inventory and conservation plan for Kalaupapa, world-famed settlement for Hansen's disease (leprosy) patients.

The Molokai district accepted the application and asked technicians of the Soil Conservation Service to inventory the settlement lands and work out a long-time conservation plan which would insure the best agricultural use of soil and water resources.

This is the story of what we found at Kalaupapa and the recommendations we made for solving a land-use problem which dates as far back into antiquity as the once-dreaded disease of leprosy itself. Modern medical science has stamped out the stigma and fear formerly associated with Hansen's disease. Newly developed "miracle" drugs are now bringing full and positive cures. It is probably more than coincidence that modern science also has a "cure" for the ailing lands on which the afflicted people of Kalaupapa have lived and died for nearly a century.

Our conservation survey and ranch inventory of the settlement lands revealed only a limited area which could be cultivated. These lands had been abandoned for many years and were grown up to trees and brush 15 to 25 feet high. The survey of the dry-land pastures showed overgrazing, continued year-round use, very little feed, and invading, unpalatable brush. Cattle which once had been of average quality had degenerated into definitely inferior animals.

NOTE.—The author is district conservationist, Kaunakakai, Molokai, T. H.



Aerial view of Kalaupapa peninsula, with land capability classes indicated; it shows clearly why the world-famous leper colony was unable to become self-sufficient



in food production. Note that there are only a few tiny areas of Classes II, III, and IV land suitable for cultivation. Most of the land can be used properly only for

grazing, and this only under the most careful conservation management. Towering cliffs separate the peninsula from the Island of Molokai proper.

The low, rocky peninsula on which the settlement is located juts out into the Pacific Ocean on the north side of the Island of Molokai. The peninsula seems a geographical afterthought. It was developed long after the earlier volcanic action which created the land on Molokai proper. Originally the peninsula was called Laupapa by the Hawaiians, but later the name was changed to Kalaupapa.

In 1864 the Hawaiian King, Kamehameha V, urged the legislature to take steps to control Hansen's disease, known then as "mai pake" (Chinese sickness). Rev. Dwight Baldwin, a medical missionary who was a member of the board of health at the time, suggested the peninsula as a site for a leprosarium. A site was chosen for headquarters on the east side of the peninsula, but it proved too cold and wet. The town site and hospitals were moved to the warmer and drier west side of the peninsula.

Homesteaders living on the peninsula at the time were granted land elsewhere in the Territory, and in 1866 the first of the afflicted people were brought to the peninsula. At first, those who came were regarded as outcasts and told to produce their own food. The general thinking was that the Government did not want to be burdened with them.

Poi, a starch derivative of the taro plant, which is a member of the arrowroot family, was the principal food. Originally, there were a number of small cultivated fields established on the peninsula's spots of better soil and in the valleys of Wailau and Walkolu, extending back into the Island of Molokai, for the production of taro and small amounts of other native crops.

The colony grew rapidly to nearly 700 people. To feed this number required intensive use of the lands. Many of the people were not physically able, or experienced in growing crops; others were despondent and did not wish to assume agricultural responsibilities. Consequently, the lands were neglected or poorly farmed. Changing tastes and eating habits over the years influenced the diet and food requirements for the settlement. The taro lands were abandoned more than a decade ago to the invasion of aggressive brush plants such as lantana, guava, and other exotics.

Changes in native diet and the continued arrival of new patients who were accustomed to a greater variety of food than that supplied by poi and fish caused the administration to cast about for new

foods. Dairy cattle were brought in as a trial, and for a time milk was made available to the residents. But milk was not wholly acceptable to the majority of patients and in time the idea was abandoned and the dairy cattle allowed to roam at will. Beef cattle were introduced in the belief that they would require little care and need little feed—they could roam, feed, breed at will, and meat on the hoof would always be available and acceptable. Horses, no longer used for farming, were also allowed to roam at will and their numbers increased. There were no fences to control the animals. With increased numbers of animals, the land was soon overgrazed, and the unpalatable brushes soon covered most of the peninsula.

It was difficult to get animals fat enough for slaughter, with the result that there was little production of meat. Beef had to be shipped to the settlement to meet food requirements.

It never really gets cold on the peninsula. The temperature seldom drops below 60°F., but during the winter the winds and rains on the east coast can be very uncomfortable. Rainfall varies from less than 30 inches a year on the tip of the peninsula to over 100 inches at the head of one of the valleys that bisects the cliffs and reaches back into the Island of Molokai proper.

The rains fall mainly throughout the winter months. In the valleys, especially in Walkolu valley, rains fall every month of the year. Trade winds blowing from the ocean are constant and sometimes heavy. Salt for cattle, for example, is constantly present on rocks and shrubs from the evaporation of spray from the ocean.

Livestock fences are not required around the boundary of the settlement, for three sides of the peninsula are bounded by the ocean and the fourth side consists of 1,600- to 2,000-foot cliffs. These cliffs effectively isolate the settlement from the main part of the Island of Molokai.

The soil conservation survey of the settlement lands included a condition classification of the vegetation. This proved a difficult task in many parts of the peninsula because of the wilderness of invading trees, brush, and weedy plants and because much of the land is strewn with rocks, boulders, and rock walls. In order to map accurately some of the area, it was necessary to use a bulldozer to make a path through the jungle.

The fringe of land near the shore around the peninsula was found to be rocky and sandy and un-



Typical result of heavy, unregulated grazing. Desirable forage species are gone. Only crabgrasses and carpetgrasses remain, which furnish little feed for livestock. The cattle here are of mixed dairy and beef breeds which never fatten enough for slaughter. Area will be reseeded to more palatable and productive grasses.

suitable for agriculture. The cliffs and volcanic crater were also classed as non-agricultural land. In the past these cliffs were heavily wooded, but due to the presence of a large number of goats the trees were destroyed, and now the watershed is less able to condense the frequent fogs and hold water. Some of these cliffs are actively eroding.

From the lighthouse on the outer point to the crater near the base of the peninsula the soils are shallow, rocky, and, on the easterly side, wind-swept. These lands are classed as VII; while they could not be cultivated, they could produce grass. On much of this land lantana (a native brush about 2 feet high) covers the ground so closely that the grass has little chance to grow, and even less chance to reproduce and spread due to competition by the brush and heavy continuous grazing. On the north-east side, at some distance from water, we found

some range in fair to good condition. Bermuda-grass covered the ground and furnished fair feed. In places, guineagrass was growing on steep slopes where brush protected it from heavy grazing. Ekoia, a valuable, palatable, leguminous shrub, was growing in the rocks where cattle and horses couldn't reach it. These lands properly grazed could produce many times their present forage.

On areas of range land, classed as VII land, fringing the cliffs, the land was taken over by heavy brush. There was practically no grazing here, due to the large rocks and heavy brush. Economically, little can be done to restore these areas to forage-producing plants.

On the north side of Kalaupapa road is a large area of fairly deep, medium-textured soils which we classed as fairly good range land. Lantana,

guava, java plum, and other brush species were so thick and rank it was not possible to examine the soils except when a bulldozer preceded the survey party. Rainfall here is over 40 inches annually and falls about 9 months of the year. This area shows great promise as a grazing area when cleared and seeded to adapted grasses. It is estimated that these lands, restored to good grass, would carry one head year-long on each 4 to 6 acres.

Rainfall in the better Class VI range land south of the road is even greater than to the north, but the brush is heavier, thicker, and higher. Forage yields following extensive clearing and reseeding would be high, but the costs of preparing the land for reseeding would also be high.

The land on which the settlement is located was classed as IV. This is a gravelly, rocky, light-textured soil, fairly deep, slight slopes. Most of this area is used for buildings and gardens. There was a fine growth of ekoia here—a legume roughly equivalent to alfalfa in feeding value. Ekoia grows wild, thick, and, when well-managed, reaches heights of 12 to 20 feet.

South of Waihanau stream and on the west side of the peninsula, about 50 acres of good deep, medium-textured soil, almost free of rock, was found. This is the best soil on Kalaupapa and is in a 40-inch-plus rainfall belt. In years past taro was grown here. Many of the terraces are still intact. Again a bulldozer was required to make a path through the jungle of guava, lantana, java plum, Christmas berry, and other aggressive but worthless shrubs that covered old fields. This area will be the first to be cleared and reseeded to forage grasses.

Along the road across the peninsula and south and east of the crater, some Classes II, III, and IV lands were found. This land, now covered by brush, was formerly cultivated. About 80 acres of it will be cleared and planted to good pasture grasses and legumes.

East of the crater and on both sides of the road, we found an area of fairly deep, gravelly soil of 10-percent slope. When cleared and seeded to adapted grasses, it should make excellent pasture. Remnants of old taro fields and terraces were found on this land. Brush had not yet covered it all. We classed the range as fair, due to the density of less-desirable weeds, carpetgrass, and crabgrasses. The livestock concentrate here at certain seasons with the result that range plants do not

have a chance to set seed, develop an adequate root system, or grow new plants.

From the settlement churches east to the ocean is another area of Class IV, potential pasture land similar to that just mentioned. Some of this land can be reworked and replanted. Some will be left as a recreational park. The widely known Father Damien Church is now surrounded by a small patch of Napier-Merker grass 9 to 12 feet high and so thick it is almost impossible to cross. Most of this pasture area can be made to produce Napier-grass instead of the less-desirable carpetgrass and crabgrasses which now cover the area.

The three large valleys formerly used by the people of the settlement will not be rehabilitated for grazing, even though the soil and weather permit. These will be left as watersheds to supply better water for the lower-lying lands.

With the foregoing information in mind and the desire of the settlement administrator to improve and maintain the agricultural land of the settlement, the inventory data were analyzed and a conservation plan was developed which provides a number of remedial measures and management practices:

- a. Reduce the present herd of 300 nondescript cattle to 40 breeding cows and 2 bulls.
- b. Reduce the horse population of about 80 head to 4 to 6 head of work horses.
- c. Remove brush from Classes II, III, and IV lands. Follow by cultivation to establish adapted pasture species for feeding and fattening stock.
- d. Remove brush from Classes VI and VII lands, and seed to adapted grasses and legumes.
- e. Divide the range into units to permit a deferred rotation system of grazing. Use rock walls and natural barriers, where they occur, to keep down expenditures for fencing.
- f. Keep bulls separated from cows except during the planned breeding season (March and April).
- g. Develop about 10 acres of irrigated pasture. This pasture can be used in critically dry times. There is a considerable overflow from the storage tanks on the Kalawao-Kalaupapa road during the summer and this water can be used for irrigating the pastures.
- h. Plant guinea, Bermuda, Alta fescue, Harding, Paspalum, and other grasses and le-



Father Damien Church, glimpsed at right, is surrounded by a trial planting of Napier-Merker grass, a forage species which figures prominently in Kalaupapa plans. When protected from grazing, this grass attains a height of 9 to 12 feet. David Akana, farm adviser of Hawaiian Extension Service, stands in harvested portion of plot.

gumes such as the local ekoa and Spanish clover.

- i. Establish small-fruit and vegetable fields on limited acreages on the better lands near the settlement.

With the initial reduction in horses and cattle and the subsequent improvement of range and pasture, the final sustained-stocking figure should

reach 100 breeding cows, capable of producing 90 high-grade beef calves each year.

The conservation plan was accepted by the settlement administration and the application of improvement measures has begun.

It is perhaps ironic that science mastered leprosy at Kalaupapa before it found a "cure" for sickness of the land which, throughout the cen-

(Continued on page 239)

WHAT MY SOIL CONSERVATION DISTRICT HAS DONE FOR ME

By JUDGE W. E. RICE

WHATEVER any soil conservation district does for anyone is in direct proportion to what he does for himself. Hence, the use of the term "cooperator."

As a district cooperator, I began to see the worth and effect of the Noble County (Okla.) Soil Conservation District with a visit to the farm (an ordinary quarter section of soil-depleted eroded upland) by the work unit conservationist, Ivan F. Dilley, in September 1945. Together, we went over the place, area by area, and then and there sat down and drew up a plan of operation for soil and water conservation, crop rotation, and land use. All accepted practices seemed to be called for—terraces, outlets, pond building, tree shelter belts, soil tests for lime and phosphate, legumes, native grass seeding, and pasture management for production of small grain, poultry, and livestock.

Between the beginning and the completion of the plan, have been experienced the usual ups and downs incident to weather extremes ranging from excess rainfall to drought. Suffice it to say that the principal obstacles now have been overcome fairly well and the farm is on a maintenance basis.

In carrying out the plan of operation, the district has furnished the use of grass drills, phosphate spreaders, and terracing equipment. It has supplied at reasonable prices rock phosphate, native grass and legume seed. With the assistance of SCS technicians, we have completed 21,648 feet of terraces, put all cultivation on the contour, established 95 acres of sweetclover, and 38 acres of native grasses. Also installed are a 3-acre wind-break and wildlife area with trees from the district, a pond for stock water and garden irrigation, pastures improved by proper stocking and overseeding. Fertilizers and lime have been applied to cropland.

We have had more garden truck than we could use and the income from the farm is increasing each year. In the past year there were produced and sold off the land \$1,200 worth of cattle, \$150

worth of hogs, \$200 worth of poultry, \$1,000 worth of eggs and cream, and \$1,200 worth of wheat.

This, then, might be considered "what my district has done for me." In a material sense, so it is. But in a larger sense, this one unit of operation is just a sample of a vast and ever-growing amount of work performed and applied on the land in conformity with scientific practices as opposed to traditional procedures. My district, together with other districts throughout the State and Nation, does for me and an army of cooperators something else of tremendous importance. It is an action program by farmers themselves. It strengthens the principle of democracy. Individual farmers are more prosperous. Community conditions are improved. One of the most important links in the chain of national defense is welded more secure.

The Noble County Soil Conservation District was one of the first districts to operate on the neighborhood group plan. How well that plan works is evidenced by the selection of the district's technical staff by the Secretary of Agriculture for a special certificate of award in the year 1950—one of but two such awards made last year in the United States. My district has made available to me the very best of technical assistance. Finally, my district has given me a fine sense of being a part of a work that is fine and constructive.

As a district supervisor, I have had an opportunity to become acquainted not only with the problems of our district but also to obtain inspiration from attending each State association meeting from 1945 up to now, and each national convention since the one held at Des Moines.

Men of good will—how many of them I have seen at these meetings!—such stalwarts as Christy of Kansas, Heidrich of West Virginia, Threlkeld of Kentucky, Williams of New Mexico, Hall of Georgia, Boswell of Texas, Leavitt of New York, Tossett of North Dakota, Fuqua of Oklahoma, the Right Reverend Monsignor Hildner of Missouri, the late McArthur of North Carolina, and supervisors by the score from Maine to California and from the Piedmont to the Palouse. Special recognition is due our own supervisors of Oklahoma.

In this time of dollar consciousness, they perform their official duties without compensation. They have attended innumerable meetings at places distant from their homes at their own expense. They have not failed to answer present in every roll call in the ranks of public service.

What my district has done for me, your district can do for you. In my opinion a soil conservation district opens up a genuine philosophy for living and can be summed up in a sentence: He who makes some constant contribution to the forces of life in some measure justifies his existence.

NOTES FROM THE DISTRICTS

FATHER HILDNER HONORED.—The Right Reverend Monsignor George J. Hildner, pastor of St. John's Church, Villa Ridge, Mo., was named Optimist of the Year (1950) by the Optimist Club of Washington, Mo.

Father Hildner is credited with having been largely responsible for the establishment of a soil conservation district in Franklin County.

SURVEYS PROVE LAND VALUES.—Edward Connell, cooperator and supervisor in the New London County (Conn.) Soil Conservation District, has found another good use for his conservation survey map. Believing that the valuation and tax assessment on his farm were too high, he took the map to the board of assessors and showed them the actual soil conditions on his farm. He says it took less than 5 minutes to convince them that the valuation should be lowered \$2,000. He believes that conservation surveys should be used as a basis for determining land values.

MORE WIDELY READ.—The foresightedness of a bank in Elmer, N. J., which sponsors subscriptions for the second straight year, has resulted in 1-year extension of subscriptions to **SOIL CONSERVATION Magazine** for 29 farmers in the Salem County work unit and new subscriptions for 10 others. It is reported that the publication is gaining popularity in the district and that more subscriptions will be purchased later this year.

CAN ANY DISTRICT TOP THIS?—Joseph Cowen just recently retired from the Ashland (Ohio) Soil Conservation District Board of Supervisors after having served about 6½ years. He was a member of the first board, organized in June 1944. Regular meetings are held each month, with occasional special meetings. Joe attended 78 con-

secutive meetings, not missing one during his entire term of office. In doing this, he traveled approximately 3,000 miles at his own expense. In addition, he attended many State conventions, and one national convention in Georgia. He served as chairman 1 year.

Joe started his conservation program on his farm in 1938, in cooperation with the CCC camp. At that time his corn yield was only about 20 bushels to the acre. By following good practices, he has jumped this to over 90 bushels per acre, with other crops improved accordingly. All of his cropland is strip cropped. He uses plenty of lime and fertilizer. He has excellent meadows, and plenty of Ladino-alfalfa-bluegrass pastures. His beef cattle receive very little grain, except for finishing. He has about 10 acres of pine planting, as well as a native woods, which he protects from livestock and manages according to good forestry practices. He was honored in 1942 by the Cleveland Farmers Club as having done an outstanding job in soil conservation and restoration. He really practices, as well as preaches, soil conservation.

All members of the board of supervisors of the Ashland district are unusually faithful in attendance at meetings. Several other members have 100-percent records but have not served so long as Joe. The attendance of the board as a whole is better than 92 percent.

—T. C. KENNARD.



Joseph Cowen (right) handed pen-and-pencil set by Harold Ohrech. It was given by other board members and SCS personnel in recognition of long and faithful service.



W. B. Wilkerson, supervisor of Catawba Soil Conservation District, discusses program for greater service with supervisors from South Carolina work group 3, Chester, S. C.

WIDENING THE SCOPE.—District supervisors of South Carolina are enlisting the active support of all interests and all groups in their soil conservation district program. Here W. B. Wilkerson, a supervisor of the Catawba Soil Conservation District, is shown discussing a Program for Greater Service at a meeting of supervisors at Chester, S. C. The Program for Greater Service, initiated by the National Association of Soil Conservation Districts, is designed to give all farm and urban groups an opportunity to help speed district work. Five committees, each with a supervisor as chairman, and with businessmen, educators, farmers, and others as members, are being set up in each district. These advisory committees will aid the district board with problems of finance, program, education, legislation, and publicity. In South Carolina, Joe B. Douthit, president of the district supervisors association arranged a series of small group meetings of supervisors to discuss and set in action the Program for Greater Service.

TWO CROPS NOW.—For years Chester Lidberg had been unable to get any agricultural use of 20 acres of deep muck land at his dairy farm near Lexington, Mass. Soil Conservation Service tech-

nicians working with the Middlesex County Soil Conservation District told him the land could be made productive. Starting in 1948, drainage was established as part of his complete conservation plan. In 1950 he realized a substantial return on his investment when he grew two crops of lettuce, broccoli, and cabbage on the reclaimed soil, now ideal for market gardening.

WATERFOWL HAVEN.—In cooperation with the New York State Conservation Department and the Federal Wildlife Restoration program, SCS technicians, working with the Oneida County (N. Y.) Soil Conservation District, are helping the Point Rock Fish and Game Club turn a 6-acre pond and marsh into a haven for migratory waterfowl, principally ducks and geese. The work is being done as part of a complete conservation plan for the club's property. Under an agreement with State and Federal agencies, club members will not shoot ducks at the pond during the next 5 years. The project, started 2 years ago, includes the planting of 30,000 trees and cover and feeding stock for wildlife, and the damming of a stream to create better fishing grounds. The club has a membership of 300 men.



DISTRICT OFFERS SCHOLARSHIP.—Supervisors of the Fountain Valley (Colo.) Soil Conservation District will award a \$350 scholarship in soil conservation education to a senior from an accredited high school within the district, according to Clarence Foster, chairman of the board.

The award will be made at commencement exercises next June, and all candidates must agree—if successful—to enroll in soil conservation courses that will lead to a bachelor of science degree at Colorado A. and M. College at Fort Collins.

The district supervisors will select the winner. Scoring will be on the following basis: written examination, 20 points; interview by supervisors, 30 points; achievement record in actual soil conservation work or in preparing a conservation plan, 25 points; high-school scholastic record, 15 points; personality, honesty, initiative, dependability, accuracy, neatness, etc., 10 points.

February 15 was the dead line for filing applications.

MILEPOSTS OF PROGRESS.—There are plenty of signs today that farmers in the San Felipe Soil Conservation District in San Benito County, Calif., are gaining ground in soil conservation.

Here are a few high spots: Four additions to the district acreage have been voted in the last 2 years. A petition to extend the boundaries a fifth time is now being circulated.

The conservation work Hugo Schmitt has put on his land is a good example of how farmers are advancing under the district's program of assistance. He leveled 170 acres and seeded them to a permanent pasture mixture. He has wells for both irrigation and stock water. "Soil conservation," says Schmitt, "has been a big help in improving my land."

Another cooperator, Fenton O'Connel, installed more than a mile of main and lateral sprinkler lines to improve water application on rolling land which was not suitable for border-check irrigation.

SIX-POND DAIRY FARM.—Raymond A. White, a district cooperator, has built six farm ponds as part of his conservation plan. White operates New England's largest dairy farm, more than 800 acres, at Acushnet, Mass. The largest pond holds 8 million gallons and has a maximum depth of 24 feet. Fed by springs, small streams, artesian wells, and surface runoff, the ponds impound water useful for irrigating pastures and other grassland for a herd of 550 cattle.

When there is a drought, as in 1949 and 1950, a crew of dairy workers moves from pond to pond getting water on the grassland; a supplemental irrigation system includes a portable pump and 5,000 feet of pipe, plus a system of small canals.

White cleared large acreages of rock, brush, and trees, and reclaimed soggy and otherwise idle wet ground that now produces an abundance of forage and silage. He is making full use of strip cropping, diversions, waterways, and outlets. From milking machines and barn cleaners to bulldozers that chop and load clover and alfalfa, the White farm is almost completely mechanized.

FEWER LOSSES FROM FLAMES.—The rapidly expanding importance of farm ponds for fire protection is demonstrated in the 1950 annual report of Chief Charley Kellogg of the Benson, Vt., fire department. The chief and a staff of 15, including the telephone operator, with an alarm system, a 1½-ton truck, fire pump and booster tank, a portable pump, 4 pack pumps, 2,291 feet of hose, 9 nozzles, and some small miscellaneous equipment, have the responsibility of protecting 189 homes and public buildings from flames. Ninety-nine of these structures are protected by 38 farm ponds, mostly small dugouts. Twelve of the ponds are along the highway. The average pond capacity is 63,200 gallons, and the average cost of construction was \$75.84.

Among structures not protected by farm ponds, 19 are located where water is available from a river, 2 are near quarries, 3 are accessible to non-farm ponds, 4 get water from lakes, 2 from reservoirs, and 1 from a well. More than 50 structures have no water, or insufficient water.

Benson is in the Poultney-Mettawee Soil Conservation District, in which 23 farm ponds were built in 1950. Seventeen of the fifty-five in the area are where water is not accessible for fire protection.

Information vital to the protection of each of the 189 Benson structures has been separately compiled by the fire chief. It shows where the nearest water supply is, its distance from the structure, how far the structure is away from department headquarters, and whether the supply of water is accessible to the fire truck at all times. A separate listing of farm ponds shows capacity, distance

from structure, distance to highway, and location with reference to structure.

Last year Benson's department answered 14 alarms—5 chimney fires, 4 where structures were ablaze, 3 grass fires, 1 tractor and 1 tree fire. Losses on four properties amounted to \$555.

"Farm ponds do a great fire-protection job. Without them we'd be almost helpless," Chief Benson says.

MISSOURI TREND.—Alta fescue produced 81 pounds of beef per acre last December while Kentucky bluegrass produced only 22½ pounds under the same conditions, reports Darnell Whitt of the SCS erosion experiment station at McCredie, Mo. The prairie soils at the station are only medium in fertility with a tight, impervious subsoil.

The growth from the 5-acre plot was an accumulation since the hay was cut early in August. Earlier production from the plot in 1950 included 471 pounds of fescue seed and 1.64 tons of hay per acre. Ammonium nitrate was applied at the rate of 100 pounds per acre in the spring and again in the fall at the same rate. Potash and phosphate were also applied as required.

Southeast-Missouri farmers are rapidly expanding their acreage of Alta fescue.

PARTNERS ON THE LAND.—Cooperation between the staff of the Kentucky agricultural training program for veterans and technicians of the Soil Conservation Service has greatly increased the efficiency of both agencies.

E. P. Hilton, director of agricultural education for the Kentucky division of agricultural education, recently wrote H. K. Gayle, State conservationist that about 25,000 veteran trainees are enrolled in the institutional on-the-farm training program in Kentucky. This represents a relatively high percentage of the farmers in the State, he pointed out.

"The vocational agricultural people cannot do the job alone," Hilton explained, "but with the help we have had from other agencies we not only have been able to do a better job of teaching but we have been able to assist other agricultural agencies in their work."

"I believe the relationship between the Soil Conservation Service and the staff in vocational agriculture can well illustrate this cooperative relationship and mutual help. I know the boys in our training program have much better conservation plans and have been able to carry out a better program of conservation practices than would have been possible had we been working alone."

"By the same token, I believe that our teachers have been able to help the Soil Conservation Service personnel in carrying out soil conservation practices in the soil conservation districts. After conservation plans have been worked out with the

teacher, the farmer, and the conservationist, the teachers are in a position to supervise closely the carrying out of the practices, in cooperation with the conservationist.

"We hope the teacher has been able to save the time of a conservationist by being on the job twice a month to check with the trainee on routine matters and thus make it unnecessary for the conservationist to visit the trainee as often as he otherwise would. This enables the conservationist to give his time to more people in the district. In the end, the efforts of our teachers and the soil conservationists are supplementing each other, rather than being a duplication of effort."

"It is our hope that this cooperative effort can be continued and expanded in the interest of rendering maximum service to our farm veteran trainees and to agriculture in the State of Kentucky."



"CLOUD-SEEDERS" ORGANIZE.—"Everybody talks about the weather, but we do something about it!" was the official slogan of a meeting in Denver in January when representatives of 10 non-profit groups sponsoring "cloud-seeding" programs in Colorado, New Mexico, Wyoming, Oregon, and Washington met to form a national association.

The meeting was called by Jim Wilson, land-owner and agricultural writer of Fort Collins, Colo., who was named secretary and news-service chief of the new organization. Wilson, who is a member of the Explorers Club of New York and author of the book, "Three-Wheeling Through Africa," is also a director of the Northeast Colorado Water Development Association, a weather-improvement project covering 8,300,000 acres in the seven northeastern counties of Colorado.

The new group will be known as the National Weather Improvement Association. Other officers elected at the Denver meeting include Harvey Harris, rancher of Sterling, Colo., president; Oliver Dilling, Connell, Wash., wheat grower, first vice president; Albert Mitchell, rancher and past president of the American Livestock Association of

Albert, N. Mex., second vice president; Don Aldrich, Eads, Colo., rancher and farmer, third vice president; and Glenn Saunders, Denver Water Board attorney, treasurer.

Main speaker at the meeting was Dr. Irving P. Krick, well-known meteorologist and president of the Water Resources Development Corp., of Pasadena, Calif., who spoke on the remarkable advances made during the last few years in the field of weather control.

Wilson emphasized that the national association is strictly independent of all commercial companies doing cloud-seeding work, but that it will cooperate with all of them.

"Our purpose," he said, "is to insure that these weather-improvement developments proceed in an orderly fashion and that this great new force is directed into constructive channels for the best interests of the whole country."

The statement of policy of the new organization, framed by Leo Horrigan, Prosser, Wash., wheat grower, includes the following points:

"We believe that a program of artificial nucleation and weather-and-crop research can be of immeasurable benefit to many areas in the promotion and development of their economic, social, and moral welfare.

"We favor the development of proper and constructive regulation through legislative action as facts become available, so as to provide orderly and continuing progress in the field of weather improvement. We recommend against, however, hasty and ill-advised legislation without proper scientific background.

"Believing that weather-improvement programs are a common trust and should be developed in such a way as to provide the greatest good for all concerned, we further believe that no one group, whether or not engaged in such a program, has the right to ignore the well-being of any other group, but each has the duty and responsibility so to conduct its acts and operations as to insure the maximum benefit for the people of the locality, State, and Nation."

Mr. Horrigan, who is president of the Horse Heaven Water Development Corp., told the convention of the weather-and-crop research project on his wheat ranch near Prosser, sponsored by the Big Bend, Horse Heaven, and Tri-County weather improvement groups.

"We're learning," he said, "how to use long-range weather forecasts to plan our farming operations as much as 8 months in advance. For instance, if we know how much it's going to rain next year, we should be able to tell how thick to plant our wheat, what variety to plant, ~~how much~~ fertilizer to use, whether to summer-fallow or not, and many other things. We're pioneering a brand-new science." He suggested that other weather-improvement groups sponsor similar projects for their areas.

"In our area," said Ralph Crum, of Ione, Oreg., president of the Tri-County Weather Research Association, "the effect of artificial nucleation in smoothing out the storms and spreading the rain was even more important than the 4 or 5 inches of extra moisture we got. We usually get a lot of runoff with our rains. This fall we had almost none. For the first time in years, we had no floods or cloudbursts, no erosion, and no damage to roads, irrigation structures, or private property."

Mr. Horrigan told of two storms of the same type that took place on his ranch within 2 weeks. The first was seeded—the second wasn't. "The seeded storm," he told the group, "gave us a gentle, even rain over the whole area. The other produced only about .02 inches of rain at our ranch house, but when I went down to the lower end of the ranch, I found everything under water, crops ruined, and half a mile of road washed out that cost the county several thousand dollars to rebuild. Next time a storm like that comes up, you may be sure we will seed it."

KALAUPAPA

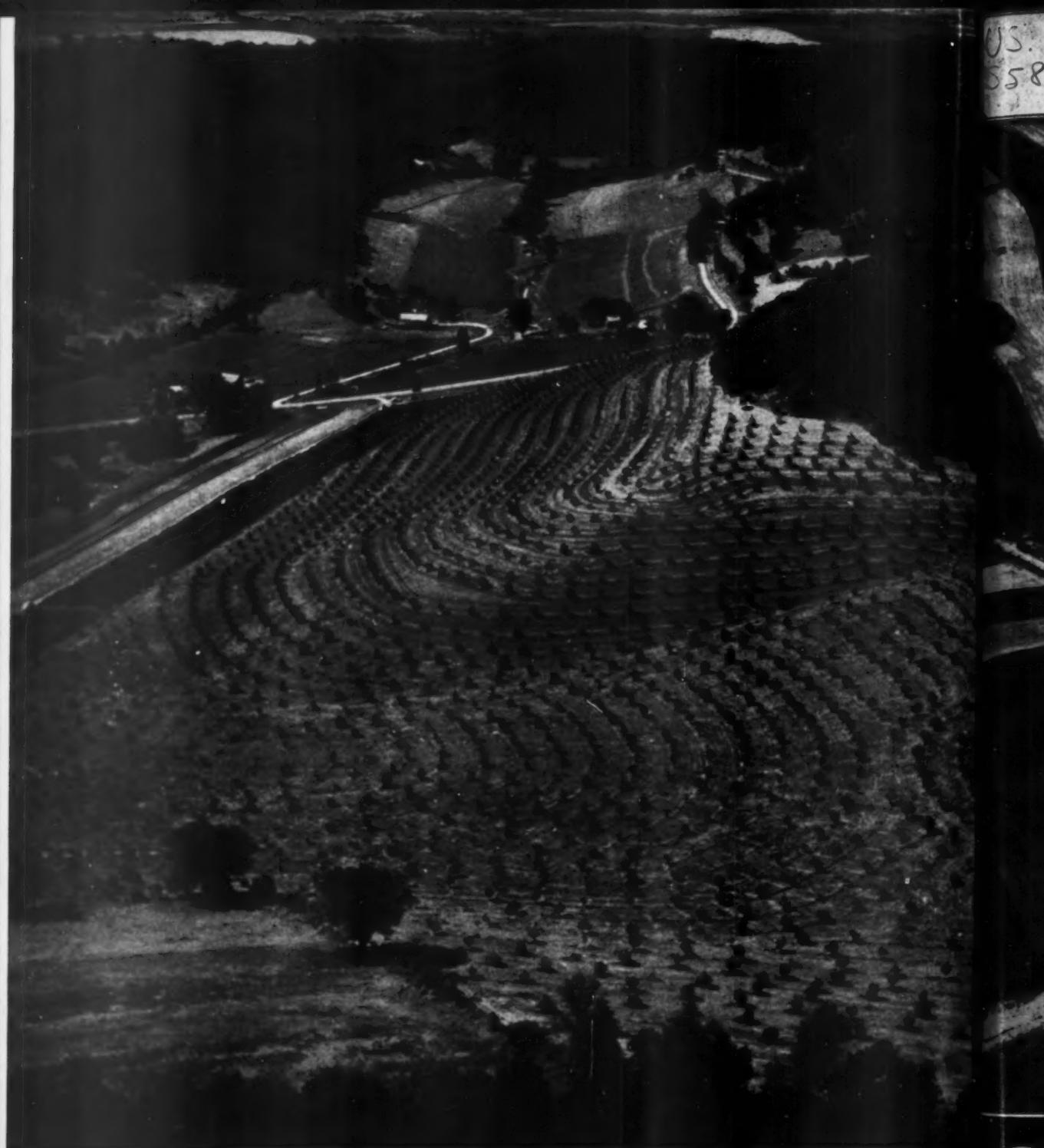
(Continued from page 233)

turies, has caused mankind far more suffering and misery. The population of Kalaupapa is now down from a high of nearly 700 people in 1881 to less than 300. Of this number, some 60 former patients are actually free to leave, but remain by choice. The need for food is far less urgent than a half century ago. It still exists, however, and farsighted settlement officials are well on the way toward restoration of the land to maximum production through soil conservation.

SOLDIER WRITES TO SOLDIER.—Out of Korea—new scene of heroic exploits—came word last fall of the award of the Distinguished Service Cross, by direction of the President, to Lt. Col. Gilbert J. Check, First Battalion, Twenty-seventh Infantry Regiment, Twenty-fifth Infantry Division, for "extraordinary heroism in connection with military operations against an armed enemy on 2 August 1950, at Chindong-ni, Korea."

Colonel Check's story was told subsequently in *The Saturday Evening Post*. His unit was attacked by overwhelming numbers of troops and tanks, which penetrated his positions and seemingly made defeat a certainty. The colonel's calm direction of defense, and his personal bravery, rallied his comparatively green troops and forced the Reds to retire.

From 1938 to 1941 this officer worked in Washington for the Soil Conservation Service. In a long letter replying to congratulations sent by his former chief, Hugh Bennett, Colonel Check writes, "I often think of my many friends in the Soil Conservation Service and of the splendid things you and your Service are doing for the Nation."



Contouring of fruit trees in South Wind Orchard, near Dakota, Minn. Greater ease of working is claimed for this arrangement, as compared with straight rows up and down hill. Sod culture is used between rows. The photographer is W. H. Lathrop.

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